

**SURFACE PLASMON RESONANCE SYSTEMS AND METHODS HAVING A
VARIABLE CHARGE DENSITY LAYER**

ABSTRACT OF DISCLOSURE

5 A device for detecting the presence of a member of a specific binding pair in a sample
includes a substrate and a variable charge density layer having a surface adjacent to the
substrate and a surface remote from the substrate. A first member of a specific binding pair is
on the surface of the variable charge density layer remote from the substrate. The first
member interacts with a second member of the specific binding pair present in a sample. The
10 variable charge density layer has a charge carrier density that can be changed by the
application of light and/or an electric field, so that a plasmon band is produced by a reflected
light source impinging on the variable charge density layer.